



## 4.2.3 Classwork

Name \_\_\_\_\_ Date \_\_\_\_\_

Can I transform a new function?

Transforming the Absolute Value Parent Graph

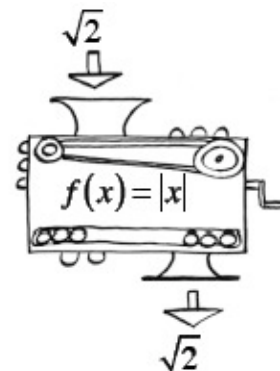
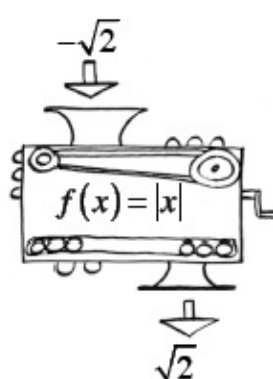
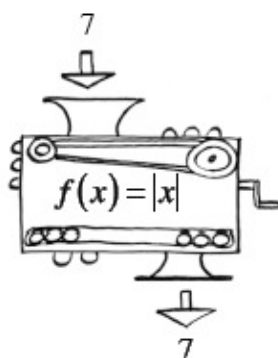
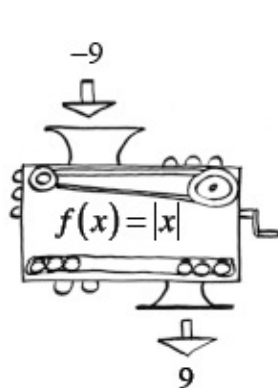
**today's big goal**

Use what you have learned about shifting graphs to find the general equation for a new parent function,  $f(x) = |x|$ . (This reads "f of x is equal to the absolute value of x.")

**No calculators necessary!**

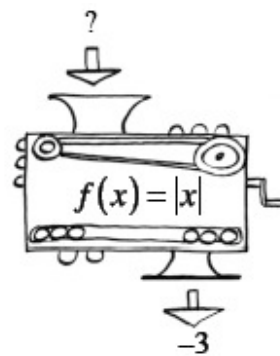
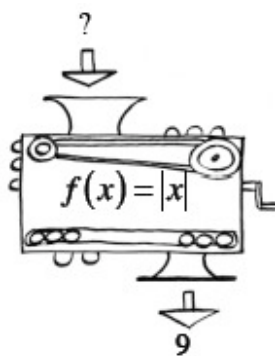
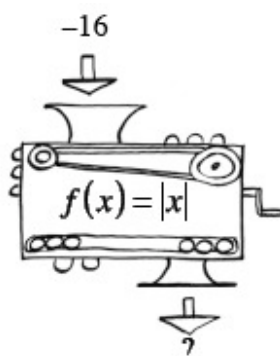
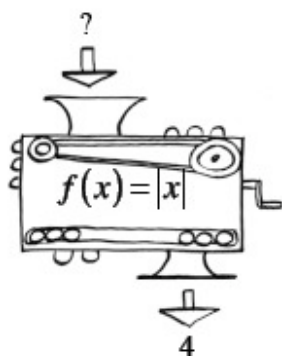
### 4-99 Learning a Function

Consider the function machines below for the function  $f(x) = |x|$ .



a. Describe what  $f(x) = |x|$  does to each input.

b. Find the missing inputs and outputs below. Make sure you find all of the possibilities.

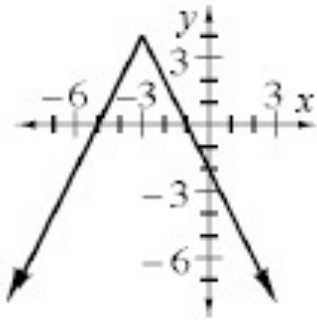


c. **Very important:** if you are given an output for this machine, how can you figure out the input?

➔ Do 4-100 on the next page FIRST!

4-101

Use your knowledge of absolute value functions to find the equation of the graph below. Be prepared to share your **strategies** with the class:



Equation of the graph: \_\_\_\_\_

### 4-102 Learning Log: Give Me Any Function

In the last few lessons, you have developed the ability to create a family of functions by transforming *any* parent function. Does the function you start with (the parent) affect how you will transform it? If so, how? If not, why not? Are there any parent graphs that are hard for you to transform? Why or why not?



## 4-100 Transformation Team Challenge

Find all of the possible types of transformations of the graph of  $f(x) = |x|$ . For each transformation you find, show the graph and its equation. Then find the general equation (in graphing form) for the family of absolute value graphs. When you have finished, add absolute value functions to the Parent Graph toolkit below. Be prepared to explain your reasoning to the class.

Name:

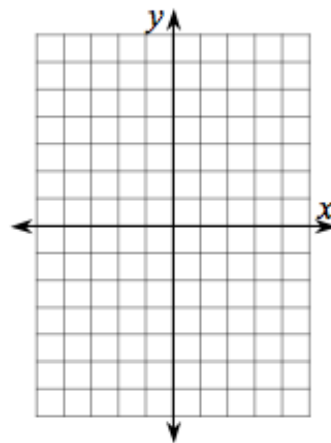
Parent Equation:

General Equation:

Properties:

Description of  $(h, k)$ :

$x$  |  $y$



Domain:

Range: